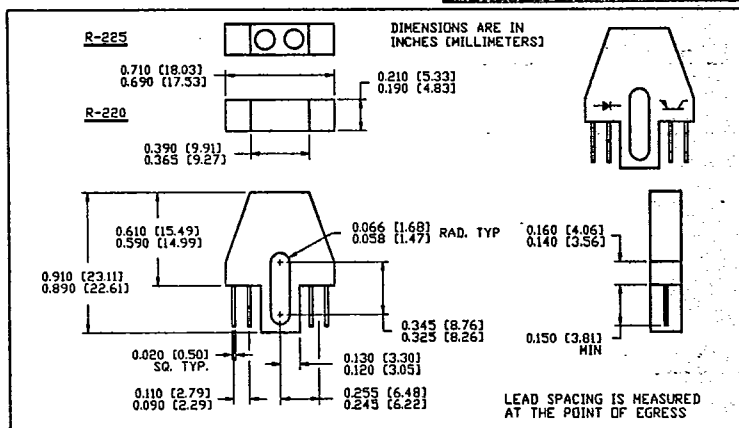
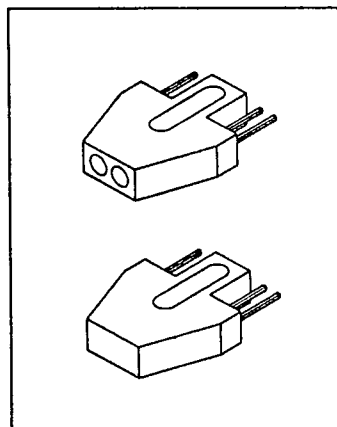


R-220/225 Series

Reflective Optical Switches



Features

- pc board mount or wire leads⁽¹⁾
- IR-transmissive housing⁽²⁾ (R-220)
- IR-opaque housing⁽²⁾ (R-225)
- two sensitivity ranges

Description

The R-220 and R-225 series consists of a gallium arsenide IRED and silicon phototransistor mounted in an injection-molded plastic housing. The mechanical axes of the sensor and IRED coincide 0.200" (5.1mm) in front of the device; peak current-transfer-ratio occurs at approximately 0.175" (4.4mm). The device is designed to provide usable photocurrents only when a reflective object is within the field of view. Call Senisys for applications assistance.

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise stated.)

Storage and Operating Temperature -40°C to $+85^\circ\text{C}$
Lead Soldering Temperature⁽³⁾ $240^\circ\text{C}^{(4)}$

IRED

Continuous Forward Current 50mA
Peak Forward Current (1 μs pulse width, 300pps) 3A
Reverse Voltage 3V
Power Dissipation 100mW⁽⁵⁾

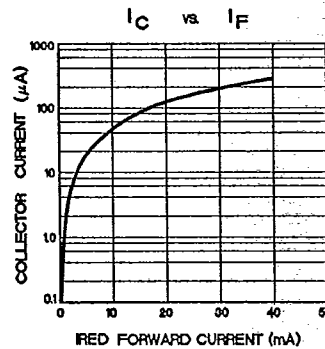
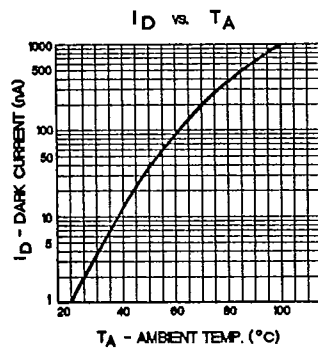
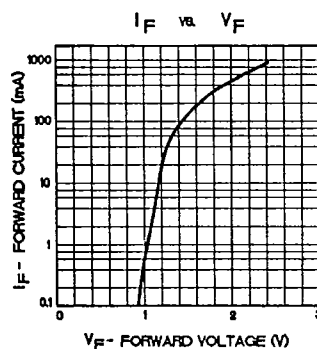
Sensor

Collector-Emitter Voltage 30V
Emitter-Collector Voltage 5V
Power Dissipation 100mW⁽⁵⁾

Notes:

1. Add a -W suffix to order with 12" (305mm) minimum, 26 AWG, UL 1429 wire.
2. Housing is soluble in some common industrial solvents; recommended cleaning agents are isopropanol or methanol.
3. 0.06" (1.5mm) from the case for 5 seconds maximum. (pc board mount configuration)
4. 260°C maximum when wave soldering. (pc board mount configuration)
5. Derate linearly from 25°C at $-1.33 \text{ mW}/^\circ\text{C}$.

Fundamental Characteristics



Senisys • 1600 West Plano Parkway • Plano, Texas 75075 • Phone: 214-422-1844 • FAX: 214-423-4661

R-220/225 Series

Reflective Optical Switches

T-41-73

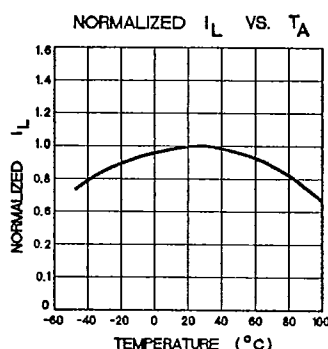
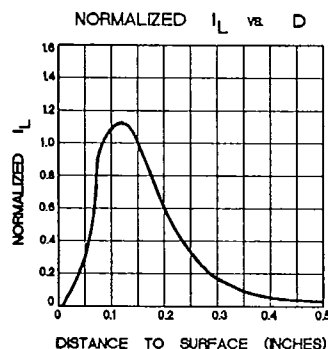
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise stated)

Symbol	Parameter	min	max	units	Test Conditions
Input Diode					
V_F	Forward Voltage	-	1.60	V	$I_F = 40\text{mA}$
I_R	Reverse Current	-	10	μA	$V_R = 3.0\text{V}$
Output Phototransistor⁽¹⁾					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	-	V	$I_C = 1.0\text{mA}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0	-	V	$I_E = 100\mu\text{A}$
I_D	Dark Current	-	100	nA	$V_{CE} = 10\text{V}, E_o = 0$
Coupled					
I_L	Light Current				
	R-22X-A ^{(2) (3)}	200	-	μA	$I_F = 40\text{mA}, V_{CE} = 5\text{V}, d = 0.150"$
	R-22X-B ^{(2) (3)}	50	-	μA	$I_F = 40\text{mA}, V_{CE} = 5\text{V}, d = 0.150"$
I_{CX}	Crosstalk ⁽⁴⁾				
	R-22X-A	-	20	μA	$I_F = 40\text{mA}, V_{CE} = 5\text{V}, d = \infty$
	R-22X-B	-	10	μA	$I_F = 40\text{mA}, V_{CE} = 5\text{V}, d = \infty$

Notes:

- Radiation outside the sensitivity range of the device may be present during these measurements. Sufficient protection has been provided when the parameter being measured cannot be altered by further irradiation shielding.
- Other ranges of light current can be specified; call Senisys for applications assistance.
- Either R-220 or R-225; both devices are available in each sensitivity range. 'd' is the distance to a Kodak neutral test card (90% diffuse reflectance); for all testing, $d = 0.150"$ (3.8mm).
- Crosstalk is the measure of radiation transferred through the housing material. $d = \infty$ implies no reflective surface and the absence of spurious external radiation paths.

Typical Characteristics



Wire Color Code:

Collector White
 Emitter Blue
 Anode Orange
 Cathode Green